

ABSTRACT

[0103] The improved applanation lens is formed of SiO_2 with purity great enough to resist discoloration upon prolonged irradiation by high-energy radiation such as UV, x-rays, gamma rays or neutrons. The lens can be used in an interface, adapted to couple a patient's eye to a surgical laser, in which the interface includes an attachment apparatus adapted to overlay the anterior surface of an eye and for stable engagement to the eye. An applanation lens has an applanation surface configured to contact the eye and applanate or flatten the anterior surface of the eye upon application of a pressure. The surface is bounded by a plane and coupled to a delivery tip of the surgical laser such that the delivery tip is referenced to the plane. The applanation lens is formed of high purity SiO_2 , preferably a fused silica. The applanation lens must have a transmittance of greater than 90% for wavelengths of light from 275nm – 2500nm, particularly for a wavelength of about 1053nm.

[0104] The lens can be used in a method for applanating an anterior surface of a patient's eye and coupling the eye to a surgical laser; which includes the steps of (1) providing an interface, the interface including a central orifice, and having top and bottom surfaces; (2) removably coupling a suction ring to the bottom surface of the interface; (3) positioning the interface over an operative area of an eye, such that the suction ring comes into proximate contact with the surface of the eye; (3) applying a suction to the suction ring to thereby stabilize the position of the interface relative to the operative area of the eye; (4) positioning an applanation lens in proximate contact with the operative area of the eye, the applanation lens having an applanation surface configured to contact the eye and applanate or flatten the anterior surface of the eye upon application of a pressure, the applanation lens being formed of high purity SiO_2 ; and (5) coupling the applanation lens to the interface to thereby stabilize the position of the lens relative to the operative area of the eye. The applanation lens must have a transmittance of greater than 90% for wavelengths of light from 275nm – 2500nm, particularly for a wavelength of about 1053nm. The applanation lens is formed of SiO_2 with purity great enough to resist discoloration upon prolonged irradiation by high-energy radiation such as UV, x-rays, gamma rays or neutrons, and is preferably a fused silica.